Favorite Flavors

Grade 1

Lesson 118

Relevant Chapters in the *Digi-Block Comprehensive Teacher's Guides:*
    Book I: Unit 1-5, Comparing Groups of Single Blocks, pages 23 - 25
                    Unit 3-2, Joining Groups of Single Blocks, pages 69 - 71
                    Unit 3-4, Separating Groups of Single Blocks, pages 77 - 79
    Book II: Unit 1-3, Comparing Groups of Single Blocks, pages 21 - 22
                    Unit 3-2, Combining Groups of Single Blocks, pages 61 - 63
                    Unit 3-5, Separating Groups of Single Blocks, pages 76 - 79

Lesson Overview

Students use blocks on number lines to organize and graph data about their favorite ice cream flavors. They use the blocks to compare and to combine categories.

Objectives

Thinking Skills: Students invent questions appropriate for a data set. They use problem-solving skills to interpret and solve word problems about the data.

Mastery Skills: Students learn to collect and organize data. They learn to solve compare and combine problems.

Materials
  • 4 number lines (0-30)

(Use masking tape to label the four number lines with the following four ice cream flavors: vanilla, chocolate, strawberry, and cookie dough. Put the number lines in a math center.)

- Chart paper or large graph paper (if available)
  (Make a large graph on the paper to match four number lines stacked horizontally. Label each row of the graph with the ice cream flavors. Leave space at the bottom of the paper to write student-generated questions. See Figure 2 below.)
- About 30 single blocks
- About 6 small holders
- 1 activity sheet per student (There are two versions. One version has word problems; the second version has space for students to generate word problems on their own.)
- Extension activity sheets (optional)

Class Introduction   (25 minutes)

Part one:

Tell students that they are going to vote for their favorite ice cream flavor. Explain the following:

- The flavors to choose from are: vanilla, chocolate, strawberry, and cookie dough.
- Students will take turns going to the math center to vote for their favorite flavor.
- Each student gets one vote.

Ask students to think of things they might like to know before they start collecting data. Write their questions on the chart or graph paper. For example:

- Which flavor will most students vote for?
- Which flavor will the least students vote for?
- How many students will like vanilla the best?
- Will more students like cookie dough or chocolate? How many more?
- Will fewer students like strawberry or vanilla? How many fewer?
- How many students will like cookie dough and strawberry?
- How many students will like all the flavors EXCEPT vanilla?
- How many votes will there be altogether?

To vote, have students place one block on the number line representing their favorite flavor. For example:
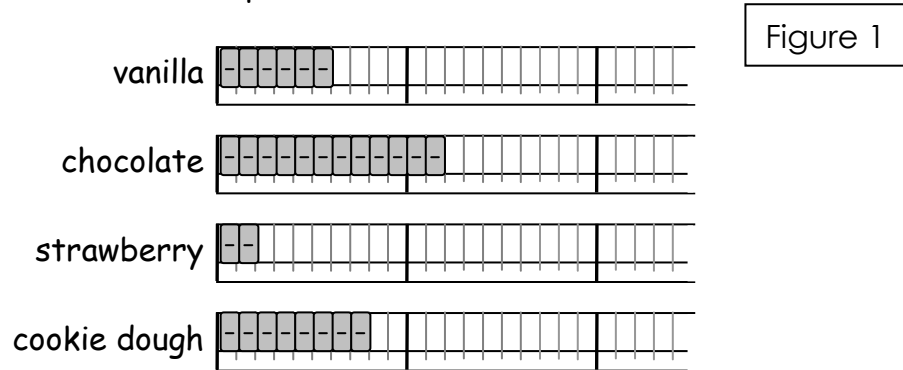
Figure 1

vanilla

chocolate

strawberry

cookie dough

[Note: Students often see bar graphs vertically. This activity gives children the opportunity to see bar graphs in another orientation (horizontally).]

After every student has voted, select a class reporter and a class recorder to read the results:

- The class reporter will count the blocks on each number line and/or read the number where the blocks ended for each flavor.
- The class recorder will color in the squares on the large chart paper to match the indicated number of votes. For example:

Figure 2

Vanilla													
Chocolate													
Strawberry													
Cookie Dough													

Which flavor will most students vote for?

Which flavor will the least students vote for?....

[Note: Students often see bar graphs vertically. This activity gives children the opportunity to see bar graphs in another orientation (horizontally).]

Have a student push together the four number lines so they look similar to the graph. Seeing the number lines in this way will help more students make the connection between the blocks and the graph.
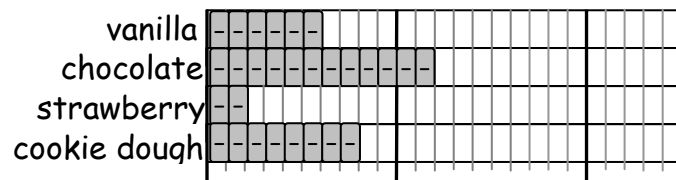
Figure 3

vanilla
chocolate
strawberry
cookie dough

Some questions are easy to solve without the blocks on the number lines. Have students try to answer as many questions as they can without moving the physical materials. Discuss strategies and responses to the questions.

Compare questions are much easier to do with the actual blocks. Choose a compare question to model, for example:

How many more students voted for vanilla than strawberry?

- With the physical number lines, students can rearrange the graph so that the blocks for vanilla are next to the blocks for strawberry. Show students how to do this.
- Now it is much easier to show the "more" or "extra" part for the vanilla:

Figure 4

vanilla
strawberry
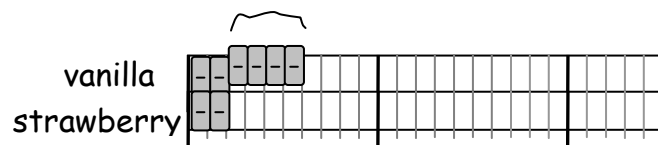
Activity   **(10-15 minutes)**

Pass out the activity sheet version 1 or version 2. Have everyone color their graphs to match the data. Read through each problem for version 1 or select some problems to solve from the class list for version 2.

Decide whether to have students answer the questions as a whole class or in small groups at a math center. For whole class instruction, have small groups of students model each problem with the blocks.

For math centers, have students work in groups of 2-4 students. Each group takes 10-minute turns at the math center. Explain the activity:

- The group works collaboratively to answer as many questions as they can in the time allotted at the math center.
- Groups can move the number lines and the blocks as long as they put them back in the original way. (The teacher needs to check between groups.)

When students are finished with the activity sheet, they can turn the activity sheet over and write more questions to ask about the graph. Also, encourage students to think of other surveys that they might like to conduct.

Closure   **(10 minutes)**

Have students share responses and discuss strategies for comparing and combining sets of blocks.

To determine how many students voted altogether (question #4), students probably tried to count them all. Elicit and discuss other strategies:

- Ask if any students combined all the blocks onto one number line. Demonstrate this technique.
- See if any groups tried to pack the blocks. Demonstrate packing the blocks as much as possible and placing them onto a place value mat. For example:

Hundreds	Tens	Ones
	2	8

- Ask students how many blocks they should have altogether. Help a student explain that if each student voted exactly once, the total number of blocks should equal the total number of students.

Assessment

As students work, observe and note the following. Do they:
- Use one-to-one correspondence to count and copy the number of blocks in each row?
- Accurately color their graphs?
- Actively participate in class discussions?
- Answer questions about the number of blocks for any <u>one</u> flavor with or without counting them all?
- Answer most and least questions without hesitation?
- Compare by moving the number lines so that they are adjacent?
- Use a count all strategy to find the total number of votes/students, or do they combine the blocks onto one number line and/or pack to find the total?
- Invent appropriate questions about the data?

Extension

❑ Have students copy the data again on version 2 of the activity sheet. Ask them to write their own word problems in each of the four spaces. Look through student-generated questions and select appropriate questions to share with the class.

❑ Have students conduct the same survey at home or after school. Ask students to bring their results to class to discuss. Use this data as a source for further investigations into graphing, comparing, and combining.

❑ Use the extension activity sheet to create other graphs. Fill in the blank squares with appropriate questions.

Favorite Flavors Version 1

Vanilla																									
Chocolate																									
Strawberry																									
Cookie Dough																									

☐ Did more students vote for vanilla or for cookie dough? How many more?

○ How many students voted for chocolate and for cookie dough combined?

▯ Did fewer students vote for chocolate or for cookie dough? How many fewer?

◯ How many students voted altogether?

Favorite Flavors Version 2

Vanilla																								
Chocolate																								
Strawberry																								
Cookie Dough																								

☐	◯
▯	⬭